PECEIVED Page 1 of 7

JUN 2 1 2001 # // B

TECH CENTER 1600/2900 6/3-26/

RAW SEQUENCE LISTING DATE: 05/17/2001 PATENT APPLICATION: US/09/312,596A TIME: 10:10:14

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\I312596A.raw

```
3 <110> APPLICANT: Role, Lorna W.
        Talmage, David
        Bao, Jianxin
 7 <120> TITLE OF INVENTION: A-FORM OF CYTOPLASMIC DOMAIN OF nARIA (CRD-NEUREGULIN
        AND USES THEREOF
10 <130> FILE REFERENCE: 0575/59360
                                                              ENTERED
see p.5
12 <140> CURRENT APPLICATION NUMBER: 09/312,596A
13 <141> CURRENT FILING DATE: 1999-05-14
15 <160> NUMBER OF SEQ ID NOS: 4
17 <170> SOFTWARE: PatentIn Ver. 2.1
19 <210> SEQ ID NO: 1
20 <211> LENGTH: 3212
21 <212> TYPE: DNA
22 <213> ORGANISM: CHICKEN nARIA
24 <400> SEQUENCE: 1
25 eggatgetge tgetactgte acttetgeeg etgeegetgt tgttacagat tittgetittg 60
26 ctccttctac cqcatgacaa ttgttttcct cgcctaagca gataccagcc tcagatgctc 120
27 aaggtgagag tettgeettt egetetggge tattggttea ettaateegg teaatttgtt 180
29 getttegggg ggaegeteet teecteagte agaagagetg gaattgettg agaggegtat 300
30 aaggaattat aaaagtggcc aggaaacacg agcgcagtga ctgcagagct gcccttggct 360
31 teggeaagge agegtgageg geagaggget egggeagggg geggggggte teettttee 420
32 cgtgcgttcc tcttctccca gttcggatga tgttgctgtt tcggacctct cgctgactcc 480
33 tgccctgtga tttttgctga gcgctgtgac tgttactccg tctctttctg tctgtgtttc 540
34 acagtaatgg actgtgatag agttaaggcc ttttggaggt gagctgtgtc acagctgatg 600
35 cttaaacatg tetgaagtag geacegagae ttteeceage eecteggete agetgageee 660
36 tgatgcatcc cttggcgggc tcccggctga ggagaacatg ccggggcccc acagagagga 720
37 cagcagggtc ccaggtgtgg caggcctggc ctcgacctgc tgcgtgtgcc tggaagcaga 780
38 gcgactgaag ggctgcctca actctgagaa gatctgcatc gcccctatcc tggcttgcct 840
39 geteageete tgeetetgea ttgetggeet caagtgggte tttgtggaea agatttttga 900
40 gtatgactct cctacacacc ttgaccctgg gaggatagga caagacccaa ggagcactgt 960
41 ggatcctaca gctctgtctg cctgggtgcc ttcggaggtg tatgcctcac ccttccccat 1020
42 acctagactt qaqaqaaqq ctqaaqtqaa aqtqaaaact qacaqataqc tcqtqacatc 1080
43 caggeeette etteageett etetetaeaa eegeateeta gatgtegggt tgtggteete 1140
44 tgccacaccg tcactgtcac catcctccct ggagcctacc acggcatetc aggcacaage 1200
45 aacagaaacc aatctccaaa ctgctccaaa actttccact tctacatcta caactgggac 1260
46 aagtcatctc acaaaatgtg acataaagca gaaagccttc tgtgtaaatg ggggagagtg 1320
47 ctacatggta aaaqacctcc caaaccctcc acgataccta tgcaggtgcc caaatgaatt 1380
48 tactggtgat cgctgccaaa actacgtaat ggccagcttc tacaagcatc ttgggattga 1440
49 atttatggaa gctgaggaac tgtaccagaa acgggtgctg accataactg gcatttgcat 1500
50 tgctcttcta gtagttggca tcatgtgtgt ggtggcctac tgcaaaacca agaagcagag 1560
51 gaaaaagttg catgaccgcc ttcggcagag ccttcgctca gagaggaaca acgttatgaa 1620
52 catggcaaat gggccacacc accccaaccc accaccagac aatgtccagc tggtgaatca 1680
53 gtacgtttca aaaaacataa tctccagtga acgtgtcgtt gagcgagaaa ccgagacctc 1740
54 gttttccaca agccactaca cctcaacaac tcatcactcc atgacagtca cccagacgcc 1800
55 tagccacage tggagtaatg gecatacega aagcattete teegaaagee acteegtget 1860
56 cgtcagctcc tcagtggaga atagcaggca caccagccca acagggccac gaggccgcct 1920
```

RAW SEQUENCE LISTING DATE: 05/17/2001 PATENT APPLICATION: US/09/312,596A TIME: 10:10:14

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\I312596A.raw

```
57 caatggcatt qqtqqqccaa gggaaggcaa cagcttcctc cggcatgcaa gagagacccc 1980
58 tgactcctac cgagactctc ctcacagtga aaggtatgtc tcagctatga ccacaccagc 2040
59 tegeatgica ecceptigati tecacactee aactieteee aagteeeete cateigaaat 2100
60 gtcaccacca gtttccagct tgaccatctc catcccttcg gtggcggtga gtccctttat 2160
61 qqacqaqqaq aqaccqctqc tqttgqtqac cccaccacqq ctqcqtqaqa aqtacqacaa 2220
62 ccaecticag caattcaact cettecacaa caateccace catgagagea acagtetgee 2280
63 acccagtect etgaggatag tggaggatga agagtatgag accaegeagg agtaegaace 2340
64 agcacaggag cotocaaaga aactoaccaa cagooggagg gtgaaaagaa caaagcocaa 2400
65 tggccatatt tccagcaggg tagaagtgga ctccgacaca agctctcaga gcactagctc 2460
66 tgagagegaa acagaagatg aaagaatagg tgaggataca ccatttetta gcatacaaaa 2520
67 teccatggea accagtetgg agecageege tgeatategg etggetgaga acaggaetaa 2580
68 cccqqcaaat cqcttctcca caccaqaaqa qttqcaaqca aqqttqtcca qtqtaataqc 2640
70 tttattttat ataatgaagt attccacctt taaattaaac aatttatttt attttagcaa 2760
71 ttccgctgat agaaaacaag agtggaaaaa gaaactttta taaattaagt atacgtatgt 2820
72 acaaatgtgt tatgtgccat atgtagcaat tttttacagt atttccaaaa tggggaaaga 2880
73 tatcaatggt gcctttatgt tatgttatgt tgagagcaag ttttgtacag ctacaatgat 2940
74 tgctqtcccq tagtattttq caaaaccttc tagccctcaq ttqttctqqc ttttttqtqc 3000
75 attgcattat aatgactgga tgtatgattt gcaagaattg cagaagtccc catttgcttg 3060
76 ttgtggaatc cccagatcaa aaagccctgt tatggcactc acaccctatc cacttcacca 3120
78 agaaaaagaa aaaaaaagct gaaaaaataa aa
81 <210> SEQ ID NO: 2
82 <211> LENGTH: 1070
83 <212> TYPE: PRT
84 <213> ORGANISM: CHICKEN nARIA
86 <220> FEATURE:
87 <221> NAME/KEY: UNSURE
88 <222> LOCATION: (32)
89 <223> OTHER INFORMATION: Wherein Xaa = unclear results
91 <220> FEATURE:
92 <221> NAME/KEY: UNSURE
93 <222> LOCATION: (42)
94 <223> OTHER INFORMATION: Wherein Xaa = unclear results
96 <220> FEATURE:
97 <221> NAME/KEY: UNSURE
98 <222> LOCATION: (113)
99 <223> OTHER INFORMATION: Wherein Xaa = unclear results
101 <220> FEATURE:
102 <221> NAME/KEY: UNSURE
103 <222> LOCATION: (163)
104 <223> OTHER INFORMATION: Wherein Xaa = unclear results
106 <220> FEATURE:
107 <221> NAME/KEY: UNSURE
108 <222> LOCATION: (182)
109 <223> OTHER INFORMATION: Wherein Xaa = unclear results
111 <220> FEATURE:
112 <221> NAME/KEY: UNSURE
113 <222> LOCATION: (199)
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/312,596A

DATE: 05/17/2001
TIME: 10:10:14

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\I312596A.raw

114 <223> OTHER INFORMATION: Wherein Xaa = unclear results 116 <220> FEATURE: 117 <221> NAME/KEY: UNSURE 118 <222> LOCATION: (888) 119 <223> OTHER INFORMATION: Wherein Xaa = unclear results 121 <220> FEATURE: 122 <221> NAME/KEY: UNSURE 123 <222> LOCATION: (934) 124 <223> OTHER INFORMATION: Wherein Xaa = unclear results 126 <220> FEATURE: 127 <221> NAME/KEY: UNSURE 128 <222> LOCATION: (984) 129 <223> OTHER INFORMATION: Wherein Xaa = unclear results 131 <220> FEATURE: 132 <221> NAME/KEY: UNSURE 133 <222> LOCATION: (1067) / 134 <223> OTHER INFORMATION: Wherein Xaa = unclear results 136 <400> SEQUENCE: 2 137 Gly Cys Cys Cys Tyr Cys His Phe Cys Arg Cys Arg Cys Cys Tyr Arg 138 1 W--> 140 Phe Cys Phe Cys Ser Phe Tyr Arg Met Thr Ile Val Phe Leu Ala Xaa 141 20 W--> 143 Ala Asp Thr Ser Leu Arg Cys Ser Arg Xaa Glu Ser Cys Leu Ser Leu 35 40 146 Trp Ala Ile Gly Ser Leu Asn Pro Val Asn Leu Phe Ala Ala Arg Gly 149 Cys Leu Ser Pro Arg Pro Pro Ser Pro Cys Phe Val Leu Phe Arg Leu 152 Leu Ser Gly Gly Arg Ser Phe Pro Gln Ser Glu Glu Leu Glu Leu Leu 155 Glu Arg Arg Ile Arg Asn Tyr Lys Ser Gly Gln Glu Thr Arg Ala Gln 100 105 156 W--> 158 Xaa Leu Gln Ser Cys Pro Trp Leu Arg Gln Gly Ser Val Ser Gly Arg 120 159 115 161 Gly Leu Gly Gln Gly Ala Gly Gly Leu Leu Phe Pro Val Arg Ser Ser 135 162 130 164 Ser Pro Ser Ser Asp Asp Val Ala Val Ser Asp Leu Ser Leu Thr Pro 155 150 -> 167 Ala Leu Xaa Phe Leu Leu Ser Ala Val Thr Val Thr Pro Ser Leu Ser 170 W--> 170 Val Cys Val Ser Gln Xaa Trp Thr Val Ile Glu Leu Arg Pro Phe Gly 185 171 180 W--> 173 Gly Glu Leu Cys His Ser Xaa Cys Leu Asn Met Ser Glu Val Gly Thr 200 174 195 176 Glu Thr Phe Pro Ser Pro Ser Ala Gln Leu Ser Pro Asp Ala Ser Leu 179 Gly Gly Leu Pro Ala Glu Glu Asn Met Pro Gly Pro His Arg Glu Asp 235 180 225 182 Ser Arg Val Pro Gly Val Ala Gly Leu Ala Ser Thr Cys Cys Val Cys RAW SEQUENCE LISTING DATE: 05/17/2001 PATENT APPLICATION: US/09/312,596A TIME: 10:10:14

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\I312596A.raw

185	100					245					250					255	
186	183	_	a1		<b>a</b> 1	245	<b>.</b>	T	<b>a</b> 1	<b>C</b>	250	7	C 0 m	<b>c1</b> ,,	T		Crra
188		Leu	GLu	Ата		Arg	Leu	ьуs	GTĀ		ьeu	ASII	ser	GLU		116	Cys
189		-1		D		<b>*</b>	31.	Q	T	_	0	T 0	0	T 011		T1.	λl-
191 Gly Leu Lys Trp Val Phe Val Asp Lys Lys Ile Phe Glu Tyr Asp Ser Pro 192 290 300 300  194 Thr His Leu Asp Pro Gly Arg Ile Gly Gln Asp Pro Arg Ser Thr Val 195 305 310 310  197 Asp Pro Thr Ala Leu Ser Ala Trp Val Pro Ser Glu Val Tyr Ala Ser 325 336  200 Pro Phe Pro Ile Pro Ser Leu Glu Ser Arg Pro Phe Leu Gln Pro Ser Leu 204 355  206 Tyr Asn Arg Ile Leu Asp Val Gly Leu Trp Ser Ser Ala Thr Pro Ser 277 370  299 Leu Ser Pro Ser Ser Leu Glu Pro Trp Thr Ala Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Thr Ala Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  209 Leu Ser Pro Ser Ser Leu Glu Pro Trp Trp Ser 370  201 Trp Trp Glu Trp Ser His Leu Trp Ser 370  202 Leu Ser Pro Ser Ser Leu Glu Pro Trp Ser 370  203 Trp Trp Glu Trp Ser His Leu Trp Ser 370  204 405  215 Trp Trp Trp Gly Trp Ser His Leu Trp Lys Cys Asp Ile Lys Gln Lys Ala 406  216 420  217 Pro Pro Arg Tyr Leu Cys Arg Cys Tyr Met Val Lys Asp Leu Pro Asn 219 405  224 Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Lys His Leu Gly Ile Glu 225 465  226 Trp Met Glu Ala Glu Glu Leu Trp Gln Lys Arg 227 Pro Met Glu Ala Glu Glu Leu Yrl Gln Lys Arg 228 450  239 Pro Pro His His Pro Asn Pro Pro Pro Asp Asn Val Gln Leu Val Asn Gln 230 Gly Ile Cys Trp Trp Lys Lys Gln Arg 350  231 Tyr Cys Lys Trr Lys Lys Gln Arg Asn Asn Val Gln Leu Val Asn Gln 232 Trp His His Pro Asn Pro Pro Pro Asp Asn Val Gln Leu Val Asn Gln 237 530  238 Fro His His Pro Asn Pro Pro Pro Ser His Tyr Trr Ser Trr Trp Trp Trp Ser 350  351 Trr Glu Ser Leu Arg Ser Trp Ser Glu Arg Asn Asn Val Gln Arg Glu 355  356 Trr Glu Ser Pro Asn Asn Ile Ile Ser Ser Glu Arg Val Val Glu Arg Glu 357 570  357 570  358 570  359 570  350 575  350 575  351 Trr Glu Ser Leu Arg Ser Trp Ser Glu Arg Asn Ser 350 570  351 Trr Glu Ser Ile Leu Ser Glu Ser His Ser Val Leu Val		TTE	Ата		тте	reu	Ala	Cys		Leu	ser	rea	Cys		Cys	TIG	ніа
194		<b>a</b> 1	<b>.</b>		m	37-3	Dh.	17. 1		T	Tla	Dha	CI.		1 an	Cor	Dro
194 Thr His Leu Asp Pro Gly Arg Ile Gly Gln Asp Pro Arg Ser Thr Val 195 305 305 310 310 315 335 335 335 335 335 335 335 335 335		GTĀ		Lys	Trp	vaı	Pue		ASP	гуѕ	TTE	Phe		тат	ASP	261	PIO
195		m1 .		<b>.</b> .		D	a1		T1.	<i>α</i> 1	<i>α</i> 1 ~	7 ~~		7 22 2	Com	mh w	Wa 1
197			HIS	Leu	Asp	Pro		Arg	TTe	GIY	GTII		PIO	Arg	Ser	1111	
198			D	m 1	a 1 -	T		71-	m	17.0 1	Dwo		C1	1101	Пттъ	ת 1 ת	
Note		Asp	Pro	THE	Ala		ser	нта	пр	Val		261	GLU	vaı	тут		261
1		D	Dha	D	T1.		000	Ton	C1.1	Cor		ת ו ת	C1u	Wa l	Thr		Cln
Note		Pro	Pne	Pro		PLO	ser	ьeu	GIU		ьуѕ	Ата	GLU	vaı		val	GIII
204         355         360         367         365         370         370         370         370         370         370         375         380 <td></td> <td>m1</td> <td>3</td> <td>Q</td> <td></td> <td>T</td> <td>370 1</td> <td>Dwo</td> <td>000</td> <td></td> <td>Dro</td> <td>Dho</td> <td>LOU</td> <td>Cln</td> <td>-</td> <td>Cor</td> <td>LOU</td>		m1	3	Q		T	370 1	Dwo	000		Dro	Dho	LOU	Cln	-	Cor	LOU
206   Tyr   Asn   Arg   Ile   Leu   Asp   Val   Gly   Leu   Trp   Ser   Ser   Ala   Thr   Pro   Ser   Ser   370   370   375   380   380   380   390   390   395   400   385   390   390   395   400   385   390   390   395   400   385   390   390   395   400   385   390   390   395   400   385   390   395   400   385   390   390   395   400   385   390   390   390   395   400   385   390   390   395   400   385   390   390   395   400   385   390   390   390   395   400   385   390   390   390   395   400   385   390   390   390   395   400   395   395   400   395   395   400   395   395   400   395   395   400   395   395   395   400   395   395   395   400   395   395   395   395   395   395   400   395		THE	ASP		ser	Leu	Val	PIO		AIG	PIO	FIIE	цец		FIU	Set	пеа
207		П	7 ~ ~		TIO	T 011	7 an	v. i		Lou	Trn	Cor	Cor		Thr	Dro	Car
New   Ser   Pro   Ser   Ser   Leu   Glu   Pro   Thr   Thr   Ala   Ser   Gln   Ala   Gln   Ala   Ala   Ash   Ash   Ash   Ser   Ala   Ash		TAL		Arg	тте	Leu	ASP		СТА	Leu	ттр	261		нта	1111	FIO	Set
1988		T 0.11		Dwo	Com	Cor	Tou		Dro	mhr	Thr	λΊэ		Cln.	λla	Cln	λla
The Glu			ser	PIO	ser	ser		Gru	PIU	1111	1111		Ser	GIII	нта	GIII	
213         Thr         Thr         Thr         Gly         Thr         Ser         His         Leu         Thr         Lys         Cys         Asp         Ile         Lys         Gln         Lys         Ala           216         Thr         Cys         Val         Azo         Gly         Gly         Glu         Cys         Tyr         Met         Val         Lys         Asp         Leu         Pro         Aso           218         Phe         Cys         Val         Aso         Gly         Gly         Glu         Cys         Tyr         Met         Val         Lys         Aso         Leu         Pro         Aso         Leu         Pro         Aso         Leu         Pro         Aso         Aso         Arg         Cys         Arg         Cys         Arg         Cys         Arg         Hro         Thr         Arg         Arg         Arg         Pro         Arg         Hro         Arg         Arg         Arg         Arg         Hro         Arg			C1	mh ×	A on	T 011		mh x	λla	Dro	Lvc		Sor	Thr	Sar	Thr	
215   Thr   Thr   Gly   Thr   Ser   His   Leu   Thr   Lys   Cys   Asp   Tle   Lys   Gln   Lys   Ala   216		1111	Glu	1111	ASII		GIII	TIIT	AIQ	PIU		пеи	Ser	1111	Ser		DCI
216       Free Cys       Val Asn Gly Gly Glu Cys       Tyr Net Cys       Val Lys       Asp Leu Pro Asn Avg Lys       Asp Leu Pro Asp Avg Lys       Avg Lys       Asp Avg Lys       Avg Lys <t< td=""><td></td><td>mh x</td><td>mh x</td><td>C1,,,</td><td>Πh∽</td><td></td><td>uic</td><td>Ton</td><td>Thr</td><td>Tue</td><td></td><td>A en</td><td>τlΔ</td><td>Lare</td><td>Gln</td><td></td><td>Δla</td></t<>		mh x	mh x	C1,,,	Πh∽		uic	Ton	Thr	Tue		A en	τlΔ	Lare	Gln		Δla
218 Phe Cys       Val Asn Gly       Gly       Gly       Gly       Gly       Gly       Tyr       Met       Val       Lys       Asp       Leu       Pro       Asn       Asp       Leu       Pro       A45       446       445       460       486       422       460<		1111	1111	СТУ		ser	птэ	пеа	1111		Cys	изр	116	цуз		шуз	ALU
219		Dho	Cvc	Wa 1		Clv	Clu	Clu	Cve		Mot	Val	T.v.c	Δen		Pro	Agn
221         Pro         Pro         Arg         Tyr         Leu         Cys         Arg         Cys         Pro         Asn         Tyr         Leu         Cys         Arg         Cys         Gln         Asn         Tyr         Val         Met         Ala         Ser         Phe         Tyr         Lys         His         Leu         Glu         Glu           224         Cys         Gln         Asn         Tyr         Val         Met         Ala         Ser         Phe         Tyr         Lys         His         Leu         Glu         Ago           227         Phe         Met         Glu         Ala         Glu         Leu         Tyr         Gln         Lys         Arg         Val         Leu         Thr         Lys         Ago         Leu         Tyr         490         Leu         Tyr         Lu         Thr         11e         Thr         Thr         Ago         Yal         Ago         Ago         Yal         Ago         Yal         Ago         Yal         Ago         Ago         Yal         Ago         Yal         Ago         Ago         Ago         Ago         Yal         Ago         Ago         Ago         Ago		rne	Суз		ASII	ату	сту	GIU		1 y L	riec	VUI	БуЗ		пси	110	11011
2224       Cys       G1n       Asn       Tyr       Val       Met       Ala       Ser       Phe       Tyr       Lys       His       Leu       G1y       Ile       Glu       Aso       Ayo       480       Ayo       Arg       Val       Leu       His       Leu       His       Leu       His       Leu       His       Leu       His       His       Leu       His		Dro	Dro		Tur	Lou	Cve	λrσ		Dro	Δen	Glu	Phe		Glv	Asn	Ara
224         Cys         Gln         Asn         Tyr         Val         Met         Ala         Ser         Phe         Tyr         Lys         His         Leu         Gly         Ile         Glu         225         465		FIO		лгу	ıyı	пец	Cys		Cys	110	ASH	GIG		1 411	O <sub>1</sub>	пор	**** 9
225       465       467       470       470       475       475       485       480       227       Phe Met Glu Ala Glu Glu Glu Leu Tyr Gln Lys Arg Val Leu Thr 11e Thr 228       485       485       485       490       490       490       495       495       495         230       Gly Ile Cys Ile Ala Leu Leu Val Sor		Cve		λen	Тиг	Va 1	Mot		Ser	Dhe	ጥህጉ	Lvs		Len	Glv	Tle	Glu
227         Phe         Met         Glu         Ala         Glu         Leu         Tyr         Glu         Lys         Arg         Val         Leu         Thr         1le         Thr         1le         Thr         495         497         497         497         497         497         497 <td></td> <td></td> <td>GIII</td> <td>лэп</td> <td>1 1 1</td> <td>Val</td> <td></td> <td>пти</td> <td>DCI</td> <td>2 110</td> <td>- Y -</td> <td></td> <td>1110</td> <td>Dou</td> <td>011</td> <td>110</td> <td></td>			GIII	лэп	1 1 1	Val		пти	DCI	2 110	- Y -		1110	Dou	011	110	
228			Mot	Glu	Δla	Glu		T.e.11	Tur	Gln	Lvs		Val	Len	Thr	Tle	
230 Gly Ile Cys Ile Ala Leu Leu Val Val Gly Ile Met Cys Val Val Ala 231		THE	1100	Olu	1114		Olu	пси	-1-	02.11		*** 9	, 42				
231		Glv	Tle	Cvs	Tle		Leu	Len	Va1	Val		Tle	Met.	Cvs	Val	Val	Ala
233		<b>4 1</b>		0,0							1			- 1			
234       515       526       520       520       525       525       525       526       526       526       526       526       526       526       526       526       526       526       526       526       526       526       527       527       526       527       5		Тvr	Cvs	Lvs		Lvs	Lvs	Gln	Ara		Lvs	Leu	His	Asp	Arq	Leu	Arg
236       Gln       Ser       Leu       Arg       Ser       Glu       Arg       Asn       Asn       Val       Met       Asn       Met       Ala       Asn       Gln         237       530		1	-1-			-1-	-1-			· 4	1				_		_
237       530		Gln	Ser	Leu	Arq	Ser	Glu	Arg	Asn	Asn	Val	Met	Asn	Met	Ala	Asn	Gln
239       Pro       His       Pro       Asn       Pro       Pro       Pro       Pro       Asn       Val       Gln       Leu       Val       Asn       Gln         240       Tyr       Val       Ser       Lys       Asn       Ile       Ile       Ser       Glu       Arg       Val       Val       Glu       Arg       Glu         243       Thr       Glu       Thr       Ser       Phe       Ser       Thr       Ser       His       Tyr       Thr       Ser       Thr       His       His         246       Thr       Glu       Thr       Val       Thr       Val       Thr       His       His         248       Ser       Met       Thr       Val       Thr       Glu       Thr       Fro       Ser       His       Ser       Trp       Ser       Asn       Gly       His         249       Thr       Glu       Ser       Ile       Leu       Ser       Glu       Ser       His       Ser       Val       Leu       Val       Ser       S					5												
240       545		Pro		His	Pro	Asn	Pro	Pro	Pro	Asp	Asn	Val	Gln	Leu	Val	Asn	Gln
242       Tyr       Val       Ser       Lys       Asn       Ile       Ile       Ser       Ser       Glu       Arg       Val       Val       Arg       Glu       Arg       His       Tyr       Thr       Ser       Thr       His       His       Ser       Trp       Ser       Arg       Gly       His         249       Tyr       Glu       Ser       His       Ser       His       Ser       Trp       Ser       Arg       Gly       His         251       Thr       Glu       Ser       Ile       Leu       Ser       Glu       Ser       His       Ser       Val       Leu       Val       Ser       S										•							
243	242	Tyr	Val	Ser	Lys	Asn	Ile	Ile	Ser	Ser	Glu	Arg	Val	Val	Glu	Arg	Glu
245       Thr       Glu       Thr       Ser       Phe       Ser       Thr       Ser       His       Tyr       Thr       Ser       Thr       His       H		-			-												
246       580       585       595       590       590       590       590       590       590       590       590       600       600       600       600       600       605       6		Thr	Glu	Thr	Ser		Ser	Thr	Ser	His	Tyr	Thr	Ser	Thr	Thr	His	His
249       595       600       605         251 Thr Glu Ser Ile Leu Ser Glu Ser His Ser Val Leu Val Ser Ser Ser         252       610       615       620         254 Val Glu Asn Ser Arg His Thr Ser Pro Thr Gly Pro Arg Gly Arg Leu																	
251 Thr Glu Ser Ile Leu Ser Glu Ser His Ser Val Leu Val Ser Ser Ser 252 610 615 620 254 Val Glu Asn Ser Arg His Thr Ser Pro Thr Gly Pro Arg Gly Arg Leu	248	ser	Met	Thr	Val	Thr	Gln	Thr	Pro	Ser	His	Ser	Trp	Ser	Asn	Gly	His
252 610 615 620 254 Val Glu Asn Ser Arg His Thr Ser Pro Thr Gly Pro Arg Gly Arg Leu	249			595					600					605			
252 610 615 620 254 Val Glu Asn Ser Arg His Thr Ser Pro Thr Gly Pro Arg Gly Arg Leu	251	Thr	Glu	Ser	Ile	Leu	Ser	Glu	Ser	His	Ser	Val	Leu	Val	Ser	Ser	Ser
255 625 630 635 640	254	Val	Glu	Asn	Ser	Arg	His	Thr	Ser	Pro	Thr	Gly	${\tt Pro}$	Arg	Gly	Arg	
	255	625					630					635					640

RAW SEQUENCE LISTING DATE: 05/17/2001 PATENT APPLICATION: US/09/312,596A TIME: 10:10:14

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\I312596A.raw

260 Arg Glu Thr Pro Aap Ser Tyr Arg Asp Ser Pro His Ser Glu Arg Tyr Cafe Cafe Cafe Cafe Cafe Cafe Cafe Cafe		257 258	Asn	Gly	Ile	Gly	Gly 645	Pro	Arg	Glu	Gly	Asn 650	Ser	Phe	Leu	Arg	His 655	Ala
263 Val Ser Ala Met Thr Thr Pro Ala Arg Met Ser Pro Val Asp Phe His 675 686 675 680 685 685 685 686 685 685 686 685 685 686 685 685		260	Arg	Glu	Thr			Ser	Tyr	Arg			Pro	His	Ser			Tyr
266 Thr Pro Thr Ser Pro Lys Ser Pro Pro Ser Glu Met Ser Pro Pro Val 267 690 690 695 700 695 700 705 705 715 710 710 710 710 710 710 710 710 710 710		263	Val	Ser			Thr	Thr	Pro			Met	Ser	Pro			Phe	His
268 Ser Ser Leu Thr Ile Ser Ile Pro Ser Val Ala Val Ser Pro Phe Met 770 705 710 710 715 725 725 725 725 725 725 725 725 725 72			Thr	Pro		Ser	Pro	Lys	Ser		Pro	Ser	Glu	Met	-	Pro	Pro	Val
270   705										_		<b>-</b>			_	_	<b>5</b> 1	**. 1
272				Ser	Leu	Thr	IIe		IIe	Pro	ser	vaı		vaı	ser	Pro	Pne	
275   Lys   Tyr   Asp   Asp   Asp   His   Leu   Gln   Gln   Phe   Asp   Ser   Phe   His   Asp   Asp   Asp   Asp   Asp   Asp   Tyr   Asp   Tyr   Met   Tyr   Tyr   Tyr   Tyr   Tyr   Tyr   Tyr   Met   Tyr		272		Glu	Glu	Arg			Leu	Leu	Val		Pro	Pro	Arg	Leu		Glu
740			T 77.0	Птт	λan	7 cn		LOU	Cln	Cln	Dho		Ser	Dho	His	Δsn		Pro
279		276				740					745					750		
281			Thr	His		Ser	Asn	Ser	Leu		Pro	Ser	Pro	Leu		Ile	Val	Glu
282			Asp	Glu		Tyr	Glu	Thr	Thr		Glu	Tyr	Glu	Pro		Gln	Glu	Pro
285		282		770					775					780				
287 Gly His Ile Ser Ser Arg Val Glu Val Asp Ser Asp Thr Ser Ser Glu Asp 290 Ser Thr Ser Ser Glu Ser Glu Thr Glu Asp 291 Fro Res 291 Fro Res 292 Fro Res 293 Fro Res 294 Fro Res 294 Fro Res 295 Fro Re				Lys	Lys	Leu	Thr		Ser	Arg	Arg	Val		Arg	Thr	Lys	Pro	
288				Hic	Tle	Ser	Ser		Val	Glu	Val	Asp		Asp	Thr	Ser	Ser	
290   Ser   Thr   Ser   Ser   Glu   Ser   Glu   Thr   Glu   Asp   Glu   Arg   Ile   Gly   Glu   Asp   Ser   Glu   Arg   Ile   Gly   Arg   Arg   Arg   Gly   Arg   Gly   Arg			GLY	1115	110	501		1119	,	014	, 41		-					
293 Thr Pro Phe Leu Ser Ile Gln Asn Pro Net Ala Thr Ser Leu Glu Pro 294		290	Ser	Thr	Ser		Glu	Ser	Glu	Thr		Asp	Glu	Arg	Ile		Glu	Asp
1			_				_	7						m1	<b>a</b>		<b>a</b> 1	D
296			Thr	Pro		Leu	Ser	He	GIn		Pro	Met	Ala	Tnr		Leu	GIU	PIO
297			715	712		Ψττ <b>ν</b>	λκα	Lau	λla		Δen	Δra	Thr	Δen		Δla	Agn	Arα
299			Ата		AIG	ıyı	Alg	пеа		Olu	ASH	1119	1111		110	1124		3
N>   302   Asn Gln   Asp   Pro   11e   Ala   Val   Xa   Asp   11e   Asn   Lys   Thr   His   Arg   Pro   303   Asn   Gln   Cys   Cys   Sys   Thr   Leu   Phe   Tyr   The   Sys   Tyr   Ser   Thr   Phe   Lys   Leu   Sys   Sys   Sys   Tyr   Sys   Thr   Phe   Lys   Lys   Lys   Sys   Sys   Tyr   Sys   Thr   Sys   Lys   Lys   Lys   Lys   Sys			Phe		Thr	Pro	Glu	Glu	Leu	Gln	Ala	Arg	Leu	Ser	Ser	Val	Ile	Ala
303										,						_		
306	W>	303					885					890					895	
W>         311         Lys         Lys         Leu         Leu         Xaa         Ile         Lys         Tyr         Thr         Tyr         Val         Gln         Met         Cys         Tyr           312         930         r         r         935         r         r         940         r         940         r         1940         r			Thr	Cys	Lys		Leu	Phe	Tyr	Ile		Lys	Tyr	Ser	Thr		Lys	Leu
W>         311         Lys         Lys         Leu         Leu         Xaa         Ile         Lys         Tyr         Thr         Tyr         Val         Gln         Met         Cys         Tyr           312         930         7         935         7         940         960         960         960         960         960         960         960         960         960         970         970         970         970         975			Asn	Asn		Phe	Tyr	Phe	Ser		Ser	Ala	Asp	Arg		Gln	Glu	Trp.
312 930	W>		Lys	Lys		Leu	Leu	Xaa	Ile	Lys	Tyr	Thr	Tyr	Val	Gln	Met	Cys	Tyr
960 317   11e Asn   Gly   Ala   Phe   Met   Leu   Cys   Tyr   Val   Glu   Ser   Lys   Phe   Cys   Thr   318   970								_								~ 1	_	_
317 Ile Asn Gly Ala Phe Met Leu Cys Tyr Val Glu Ser Lys Phe Cys Thr 318 965 970 975  W> 320 Ala Thr Met Ile Ala Val Pro Xaa Tyr Phe Ala Lys Pro Ser Ser Pro 321 980 985 985 990 990 990 323 Gln Leu Phe Trp Leu Phe Cys Ala Leu His Tyr Asn Asp Trp Met Tyr 324 995 1000 1000 1005 1005 326 Asp Leu Gln Glu Leu Gln Lys Ser Pro Phe Ala Cys Cys Gly Ile Pro 327 1010 1015 1020				Pro	Tyr	Val	Ala		Phe	Tyr	Ser	Ile		Lys	Met	GTA	Lys	
Name				Asn	Gly	Ala	Phe		Leu	Cys	Tyr	Val		Ser	Lys	Phe	Cys	
321 980 985 990 323 Gln Leu Phe Trp Leu Phe Cys Ala Leu His Tyr Asn Asp Trp Met Tyr 324 995 1000 1005 326 Asp Leu Gln Glu Leu Gln Lys Ser Pro Phe Ala Cys Cys Gly Ile Pro 327 1010 1015 1020		318					965			,		970					975	
323 Gln Leu Phe Trp Leu Phe Cys Ala Leu His Tyr Asn Asp Trp Met Tyr 324 995 1000 1005 326 Asp Leu Gln Glu Leu Gln Lys Ser Pro Phe Ala Cys Cys Gly Ile Pro 327 1010 1015 1020	W>		Ala	Thr	Met		Ala	Val	Pro	Xaa		Phe	Ala	Lys	Pro		Ser	Pro
324 995 1000 1005 326 Asp Leu Gln Glu Leu Gln Lys Ser Pro Phe Ala Cys Cys Gly Ile Pro 327 1010 1015 1020			Gln	Leu	Phe		Leu	Phe	Cvs	Ala		His	Tyr	Asn	Asp	-	Met	Tyr
327 1010 1015 1020		324			995				-	1000				-	1005			
227 2020 = ===	•				Gln	Glu	Leu			Ser	Pro	Phe			Cys	Gly	Ile	Pro
329 Arg Ser Lys Ser Pro var met Ara Leu int Pro Tyr Pro Leu His Gin					T	0	Dro			<b>۸</b> ۱~	T 0.11	mh.∽			Dro	Lou	uie	Gln
		329	Arg	ser	гÀг	ser	PIO	val	met	Ald	neu	1111	P10	1 Y 1	F10	TEU	1113	3111



Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

## VERIFICATION SUMMARY

DATE: 05/17/2001 TIME: 10:10:15

PATENT APPLICATION: US/09/312,596A

Input Set : A:\593601.app

Output Set: N:\CRF3\05172001\1312596A.raw

```
L:140 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:143 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:158 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:167 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:173 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:302 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:311 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:320 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:335 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:426 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:489 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:492 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:495 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:498 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
\tt L\!:\!501~M\!:\!341~W\!: (46) "n" or "Xaa" used, for SEQ \tt ID\#\!:\!4
L:504 \ M:341 \ W: \ (46) "n" or "Xaa" used, for SEQ ID#:4
L:507 \ M:341 \ W: \ (46) \ "n" \ or "Xaa" \ used, for SEQ ID#:4
```